

Cricket Behavior Inquiry Lab

Lab Overview

Behavior in organisms is easy to observe but not so easy to answer questions about. Because multiple factors can all influence behavior, some questions require an understanding of multiple disciplines. Organism responses to certain stimuli can be tested quite easily. A *chemotactic* preference deals with a movement towards or away from a chemical stimulus. This can be its odor or the way it interacts with their senses to produce some sensation. Another example is *phototactic* preference in which light is avoided or sought out.

In this lab you will study cricket behavior as a function of a stimulus. You will decide what to test, how to test it, document the results and attempt to analyze why they behaved the way they did based on principles of 1.) genetics, 2.) energy & material requirements, 3.) evolution & 4.) interactions (the 4 big ideas in this course). You must generate a null hypothesis that can be analyzed using the **Chi Square Test**; accordingly, the data must include observed values & expected values of data.

Lab Materials

There are empty water bottles constructed into “Choice Chambers”, so called because the crickets will “Choose” where to be within the chamber in response to your stimulus of choice. The ends will be plugged with cotton balls to avoid their escaping, but can be saturated with liquid(s) if needed.

Besides these chambers (1 per group) & the crickets (8 per group), **you must determine ALL materials & methods you will use for your chosen experiment prior to the lab and prepare them prior to the lab day. If all of the materials are not ready the day of the lab, the group will incur a 50% deduction for their lab performance grade automatically.**

The materials & methods you use should NOT alter the physical ability of the crickets to move in the chamber and also should NOT be able to cause any harm to the animals outside of the slight increase in stress level due to a non-native environment.

Cricket Behavior Lab Performance Grade Rubric

Component	Description	Points
Equipment Use	1. All materials were handled appropriately during the lab (5) 2. All materials were handled appropriately following the lab (5)	10
Science Skills	1. Purpose, hypothesis & procedures are aligned to lab topic (6) 2. Data collection appropriate for usage of Chi Square analysis (5) 3. Expected values accurately determined (5) 4. Appropriate controls used in experiment (4)	20
Teamwork	1. All members supported each other in a positive manner (10) 2. Collected data was optimal as a result of excellent teamwork (5)	15
Participation & Preparation	1. All members had an equally important role in the work (5) 2. All members contributed to the lab preparation (5) 3. All members present & ready for the lab with no prompting needed from teacher to get started (5)	15
Total Points Possible		60

This lab is meant to be inquiry based so keep in mind...

YOU CAN ASK: Intelligent questions about the crickets that you couldn't research on your own

YOU CAN ASK: Intelligent questions about the stimuli that you couldn't research on your own

YOU CAN ASK: Intelligent questions about materials I would not expect you to have used before in science classes or everyday life

YOU CAN ASK: Any other intelligent questions that arise before, during or after the lab

YOU SHOULDN'T ASK: Questions that you could find out easily on your own

YOU SHOULDN'T ASK: Questions about procedures or skills we have previously used in class

YOU **REALLY** SHOULDN'T ASK: Questions that you should know after passing at least 9 years of science classes

For the lab report, perform all sections except the analysis as per the general report guidelines packet. The analysis should include your Chi square analysis showing calculations, appropriate acceptance or rejection of the null hypothesis, and a logical explanation of the cricket behavior based on the 4 big ideas of biology: 1.) genetics, 2.) energy & material requirements, 3.) evolution & 4.) interactions.